

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A block copolymer formed of:

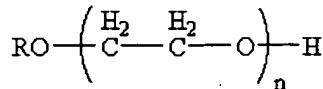
(a) a copolymer of a polyethylene glycol (PEG)-based compound and a biodegradable polymer; and

(b) a sulfonamide-based oligomer,

wherein the sulfonamide-based oligomer (b) contains a hydrophilic functional group selected from the group consisting of hydroxyl and, carboxyl and amine groups at a terminal end thereof; wherein the sulfonamide-based oligomer (b) is coupled to only the biodegradable polymer in the copolymer (a) by a direct bond at the hydrophilic functional group; and wherein the block copolymer forms hydrogel by sol-gel transition in accordance with a change in temperature and pH.

2. (original): The block copolymer of Claim 1, wherein the polyethylene glycol-based compound is represented by the following formula 1:

[Formula 1]



wherein R represents hydrogen or an alkyl group containing 1 to 5 carbon atoms, and n is a natural number ranging from 11 to 45.

3. (original): The block copolymer of Claim 1, wherein the molecular weight of the polyethylene glycol-based compound is 500-2,000.

4. (original): The block copolymer of Claim 1, wherein the biodegradable polymer is at least one selected from the group consisting of caprolactone, glycolide and lactide.

5. (previously presented): The block copolymer of Claim 1, wherein the copolymer of polyethylene glycol-based compound - biodegradable polymer is at least one selected from the group consisting of polylactide, polyglycolide, polycaprolactone, poly(caprolactone-lactide) random copolymer (PCLA), poly(caprolactone-glycolide) random copolymer (PCGA), and poly(lactide-glycolide) random copolymer (PLGA).

6. (original): The block copolymer of Claim 1, wherein the molecular weight ratio of the PEG-based compound to the biodegradable polymer is 1:1-3.

7. (canceled).

8. (previously presented): The block copolymer of Claim 1, wherein the sulfonamide-based oligomer is formed from a sulfonamide-based compound which is at least one selected from group consisting of sulfamethisole, sulfamethazine, sulfasetamide, sulfisomidine, sulfaphenazole, sulfamethoxazole, sulfadiazine, sulfamethoxydiazine, sulfamethoxypyridazine, sulfadoxine, sulfapyridine, sulfabenzamide and sulfisoxazole.

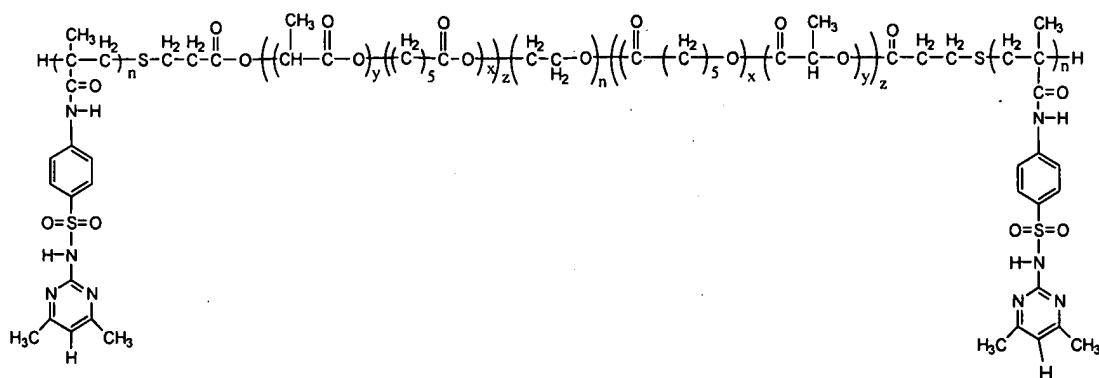
9. (original): The block copolymer of Claim 1, wherein the molecular weight of the sulfonamide-based oligomer is 500-2,000.

10. (original): The block copolymer of Claim 1, which is a triblock or higher order multiblock copolymer.

11. (original): The block copolymer of Claim 10, which is a triblock or pentablock copolymer.

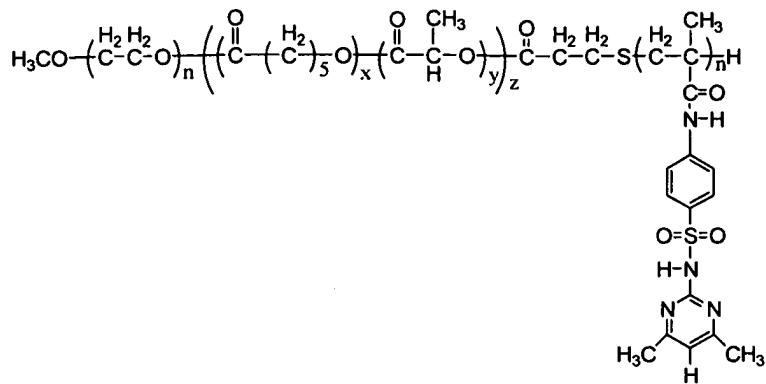
12. (original): The block copolymer of Claim 1, which is represented by the following formula 2:

[Formula 2]



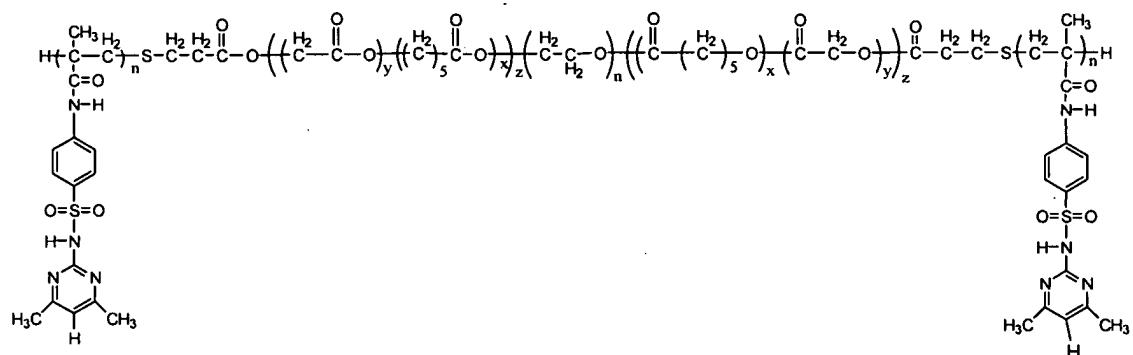
13. (original): The block copolymer of Claim 1, which is represented by the following formula 3:

[Formula 3]



14. (original): The block copolymer of Claim 1, which is represented by the following formula 4:

[Formula 4]



15. (previously presented): A hydrogel composition comprising a block copolymer as claimed in any one of Claims 1-6 and 8.

16. (original): A hydrogel formed from a hydrogel composition as claimed in Claim 15.